

*Today's Discussion*

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Introduction

How Lead Affects Children

Response to a Child with Lead Poisoning

Primary Prevention

Birth to Three Professionals




*Introduction*

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Lead poisoning is the most serious environmental health threat facing young children in the U.S.

Lead poisoning in young children causes impairment of mental and physical development.




*Introduction*

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Lead poisoning can be prevented by:

- Controlling lead hazards
- Decreasing lead exposure
- Increasing awareness of how to protect children among parents, property owners, health care providers, home visitors and others interacting routinely with families with young children




*Introduction*

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*A Teachable Moment..*

Working with parents of young children in their homes.



*How Lead Affects Children*



## How Lead Affects Children

A child is at risk of lead exposure if the child is under the age of 6 and...

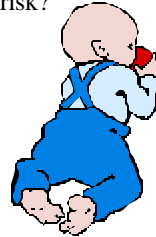
- lives in home or regularly visits a daycare or home built before 1978
- has a sibling who is lead-poisoned
- is eligible for Medicaid or WIC services
- has an adult in the home works with lead



## How Lead Affects Children

Why are children at greater risk?

- Hand-to-mouth behavior
- Rapidly developing nervous system - vulnerable to the effects of lead
- Higher rate of absorption



## How Lead Affects Children

How does lead get into the body?

- Ingested - mouth (most common source of exposure for children)
- Inhaled - nose (occupational exposure)
- *Lead dust is not absorbed through the skin.*



## How Lead Affects Children

Children are considered lead poisoned if they have a blood lead level (BLL) of 10µg/dL or greater.

*However . . .*

Growing research indicates that BLLs less than 5µg/dL can negatively affect a child's future.



## How Lead Affects Children

The reason for the long-term impact of lead poisoning is due to the toxic effect of lead on normal brain development:

- Impacts biological activities at many different cellular levels
- Disrupts main structural components of the blood brain barrier
- Interferes with the development of synapses in the brain

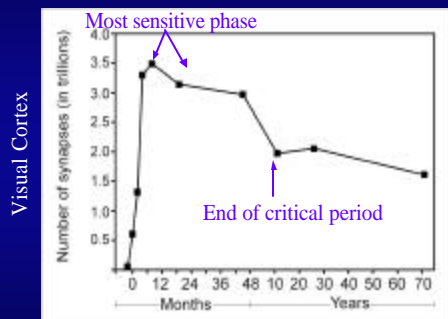


## How Lead Affects Children

Synapse development in the brain occurs is most sensitive between 6 to 18 months of age.

This is the same phase when normal activity of the child increases exposure to lead sources.

## Key Period of Synapse Development



Huttenlocher, *Neuropsychologia* 1990;28:517-27



## How Lead Affects Children

The toxic effects of lead on the brain disrupt normal development of:

- Emotional response
- Memory
- Learning
- Timed reactions
- Hearing



## How Lead Affects Children

The effects of lead poisoning result in:

- Classroom disruption
- Increased costs for special education
- Increased rates of high school drop out
- Anti-social behavior
- Poor school performance, especially related to skills needed during “critical transition periods” in learning.



## Response to a Child with Lead Poisoning



## Response to a Child with Lead Poisoning

How a family reacts when the news hits:

- The family of a lead poisoned child is often overwhelmed.
- Feelings of fear, guilt, uncertainty, loss of control are often described.
- They may be faced with very real housing and financial concerns.



## Response to a Child with Lead Poisoning

- Families with a child with lead poisoning are suddenly dealing with a variety of “specialists” -- medical, public health, contractors, education, child development specialists, housing, bankers, insurance --
- Not to mention the paperwork!



### *Response to a Child with Lead Poisoning*

The local public health department has primary responsibility to respond to a child/family with lead poisoning.

The minimum response is described below and is based on the blood lead level of the child.



### *Response to a Child with Lead Poisoning*

Minimum response by local public health:

- When BLL is between 10-19 $\mu$ g/dL:
  - Notify family of child's blood lead level
  - Provide education on environment and nutrition
  - Monitor blood lead level with subsequent tests
  - In some communities, a home visit is conducted to identify sources of lead



### *Response to a Child with Lead Poisoning*

- When BLL is over 20 $\mu$ g/dL:

In addition to activities for a BLL of 10 $\mu$ g/dL . . .

  - Conduct environmental investigation and order lead hazard reduction
  - Obtain a medical history and physical exam
  - Refer for lab tests (hematocrit, iron status)
  - Perform a developmental screening test and refer for a thorough neurobehavioral exam if delays are noted



### *Response to a Child with Lead Poisoning*

- At BLL over 45 $\mu$ g/dL:

In addition to all previous activities . . .

  - Refer to physician for chelation therapy
  - Assure that the child is in a lead-safe environment during chelation



### *Response to a Child with Lead Poisoning*

In many communities, health departments (LHDs) and Birth-to-Three programs collaborate in providing developmental assessment and follow-up.



### *Response to a Child with Lead Poisoning*

This collaboration most often begins with a referral from the LHD to Birth-to-Three to provide:

- the developmental screening test
- a thorough neurodevelopmental assessment
- follow-up services for identified delays



### *Response to a Child with Lead Poisoning*

For families, this collaboration can provide increased support and access to services for their child.



### *Preventing Lead Poisoning*

The life-long impact of lead toxicity on a child's development makes

#### ***PREVENTION***

all the more urgent.



### *Preventing Lead Poisoning*

Treatment of the environment is the *primary* treatment of children with lead poisoning and the *only* path to primary prevention.



### *Preventing Lead Poisoning*

Increasing (1) the number of people in a child's world who are able to identify possible sources of lead hazards in their environment and (2) implementing steps to decrease exposure is an important step in preventing lead poisoning.



### *Birth-to-Three Professionals*



### *Birth-to-Three Professionals*

Birth-to-Three professionals can be in a position to (1) prevent lead poisoning, and (2) assist families whose child is poisoned and may be demonstrating some delays.



## Birth-to-Three Professionals

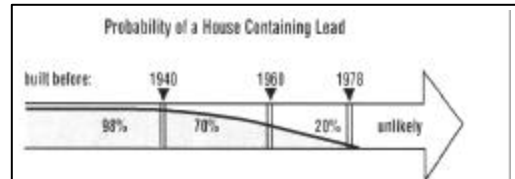
Looking out for lead is the first step in identifying possible lead sources.

The primary lead hazards are caused by deteriorated lead-based paint in older homes.



## Birth-to-Three Professionals

The older the home, the more likely it is to have lead in paint in high concentrations.



## Birth-to-Three Professionals

- Lead Paint is:
    - chipping
    - peeling
    - chalking
    - cracking
    - bubbling
    - alligatoring
  - Lead paint on friction, impact or chewable surfaces:
    - Windows - sills and wells
    - Doors & door frames
    - Floors and stairs
    - Porches, railings and banisters
    - Fences
- Chips  
Dust  
↓  
Soil



## Floors



## Windows



## Porches





## Play Areas



## Other sources of lead to be aware of . . .

- Vinyl window blinds
  - Pottery and ceramics
  - Leaded crystal
  - Take-home lead on work clothes
  - Hobbies - stained glass, fishing lures
  - Soil
  - Folk remedies
  - Lead smelters
  - Painted toys and furniture
  - Candle wicks
  - Children's jewelry
- BUT THE PRIMARY SOURCE IS LEAD-BASED PAINT!**



## *Birth-to-Three Professionals*

When you are in the home of a family with children under 6 years of age, note if deteriorated paint is present.

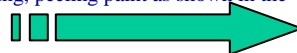
If so, there are a number of actions that can help the family address this health threat.



## *Birth-to-Three Professionals*

- 1. Is this family living in an old home?**  
***Focus on areas of concern: where the child plays, sleeps, and eats.***

Do you see chipping, peeling paint as shown in the previous slides?



## *Birth-to-Three Professionals*

- 2. Support and reassure families by providing a sense of control through knowledge.**

Take a copy of this pamphlet with you on home visits to the family. They should have received it if they purchased their home or signed a lease since 1996.



## *Birth-to-Three Professionals*

- 3. Provide families with information to prevent or decrease lead exposure.**

Temporary Measures can help today.

Long-term Solutions help this family and children who may live here in the future.



## *Birth-to-Three Professionals*

### Temporary Measures for the Environment

- Vacuum surfaces with a HEPA-filter vacuum; professional carpet cleaning; or remove carpet if poor condition precludes thorough cleaning.
- Wet clean exposed areas - floors, windows and other surfaces.
- Remove or get rid of any furniture or toys with lead-painted surfaces.



## *Birth-to-Three Professionals*

### Temporary Measures for the Child

- Wash hands before and after play, napping, eating.
- Use soap and water to clean bottles, pacifiers and toys regularly.
- Remove shoes before entering house.
- Use cold water for cooking & formula preparation.
- Keep play areas away from windows or bare soil.



## *Birth-to-Three Professionals*

### Long-Term Solutions

- Apply for HUD funding for lead hazard reduction. Qualification is based on the income level of those living in the house. The health department lead program has more information.
- Control lead hazards through permanent measures or continuous careful maintenance of existing lead paint.
- Enroll property in the Lead-Free/Lead-Safe Registry program.



## *Birth-to-Three Professionals*

### **4. Empower families to advocate for their children**

- Advocate for a lead-safe environment by talking with their landlord about lead hazards in the home.
- Advocate for appropriate and timely diagnosis of learning/developmental issues and support with school personnel.



## *For More Information*

- Environmental Protection Agency (EPA)  
[www.epa.gov/lead](http://www.epa.gov/lead)
- Housing and Urban Development (HUD)  
[www.hud.gov/lea](http://www.hud.gov/lea)
- National Lead Information Center  
Copies of regulations: 1-800-424-LEAD
- WI Lead-Free/Lead-Safe Registry 608-261-6876  
[http://www.dhfs.state.wi.us/dph\\_boh/Asbestos\\_Lead/INDEX.HTM](http://www.dhfs.state.wi.us/dph_boh/Asbestos_Lead/INDEX.HTM)



## *For More Information*

Please contact us with your thoughts and questions....

### Wisconsin Childhood Lead Poisoning Prevention Program

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